SCHOOLS?

**A DEBATE BETWEEN
CEM KANER & REX BLACK
@ STPCON**

**CEM KANER
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The notes on Slides 1 and 2 are the text of my prepared remarks. After that, in the actual debate, I spoke extemporaneously from the slides, and answered questions. The rest of the notes forward are simply the ideas that I think might clarify these slides as a set of materials to read, not as a record of a debate.

Much of the material in these slide notes is adapted from:
- a blog post that I wrote on the history of the concept of "Schools of software testing" in 2006: http://kaner.com/?p=15
- a blog post that I wrote on "What is context-driven testing?" in 2009: http://kaner.com/?p=49
- a privately-circulated 2009 draft of a chapter for a book (a collection of papers) that someone else was thinking about publishing. The chapter was called "Testing: A Personal History." Among many other things, it summarized the evolution of my notions of the nature of "schools of thought" and the concerns I had about the increasingly divisive path being taken by some activists in the Context-Driven School. Those concerns were part of a growing friction I was experiencing with some other activists in the Context-Driven School. Those differences had been multiplying and were (in retrospect, not surprisingly) evolving into interpersonal disputes on other dimensions. Ultimately they led to some semi-public disputes about the running of CAST 2011, to my removal from the context-driven mailing list (software-testing on yahoogroups) and to my 2012

revisions to the context-driven testing website (contextdriventesting.com). See especially

- A response I published to James Bach's post, "Schools of Testing: Here to Stay" (his post: http://www.satisfice.com/blog/archives/134; my response http://www.satisfice.com/blog/archives/134#comment-161460)
- "About" at http://context-driven-testing.com/?page_id=9;
- "Context-driven testing is not a religion" at http://context-driven-testing.com/?p=23, and
- "Contexts differ: Recognizing the difference between wrong and Wrong" at http://context-driven-testing.com/?p=38
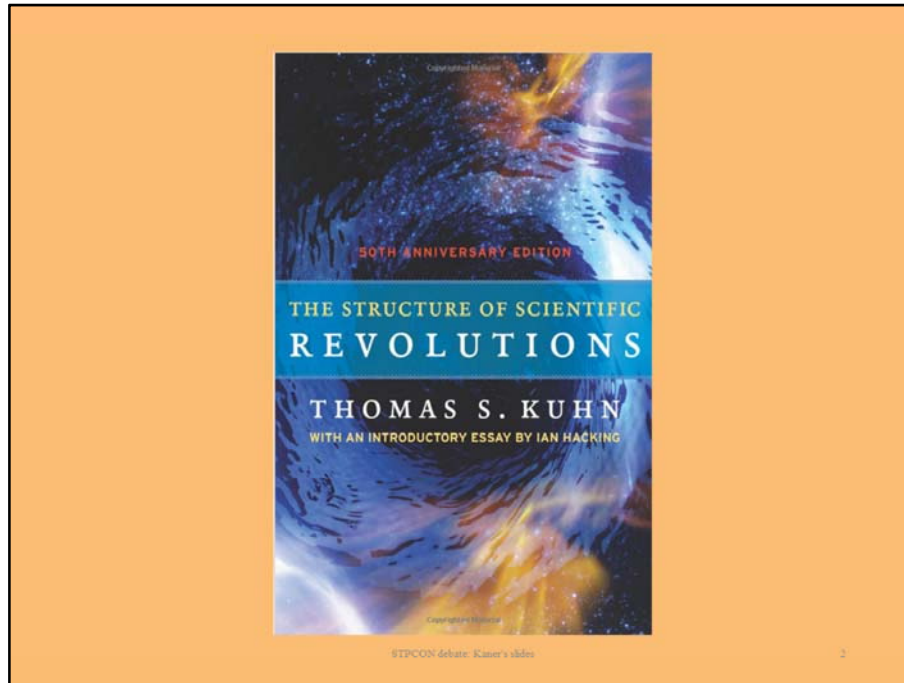
I arrived at university in 1970, in a time of social unrest.

Thomas Kuhn had published The Structure of Scientific Revolutions in 1962. He wrote mainly about the hard sciences, chemistry and physics, though people have often interpreted his writing as primarily applicable to the social sciences. That's relevant to us, in my view, because I think of software testing as a social science.

Kuhn argued that the organizing principles of a scientific field are heavily influenced by the interactions and organizing assumptions of the people in the field. By 1970, this had become part of the main stream of scientific discussion.

As an undergraduate, I studied mainly philosophy and math. My courses in Indian philosophy taught me that appearances are deceiving. My courses on Kant and Hegel taught me that ideologies and ideas evolve through opposition. Get two well-formed views that disagree. Their advocates will grind their views against each other. Eventually, a third way will emerge.

Schools of thought, as I studied them, are the hosts for this dialectic process, this evolution through contrast.
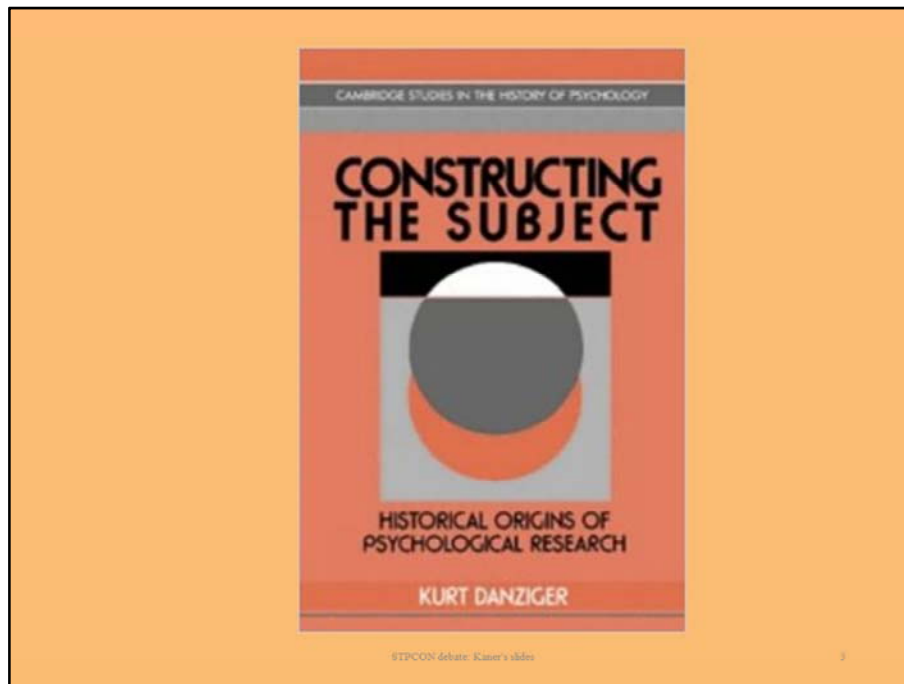
In 1974, I took a two-semester course on Theories of Human Nature with Kurt Danziger. Danziger would later write a series of books on the history of research in psychology. Reading the most famous of these, *Constructing the Subject*, in preparation for this debate, I realized again how much my perspective owes to Danziger.

Like Kuhn, Danziger sees the shaping of the core methods and facts of a field through its social dynamics. Scientists are not neutral discoverers. They are advocates for ideas. They engage in goal-focused work. They use marketing techniques, including propaganda. They pay attention to what they can get funding for, what will gain approval from the public or from powerful people, what they can sell.

Then I went to graduate school at McMaster University, which was one of the leading universities for experimental psychology. Mac was home to leaders and activists in several schools of thought. It was an amazing experience. I read about the schools' conflicts in books, and then I got to *watch them* in person. The disagreements were sometimes intense, but they were collegial. We could learn about issues from multiple perspectives. We learned a lot from these people.

So it was no surprise that when I came to Silicon Valley in 1983, I was well primed to notice the deep disagreements in the field, the interpersonal fault lines that marked boundaries of

the disagreements, and the segregations of differently-focused discussions that I eventually labeled as schools.
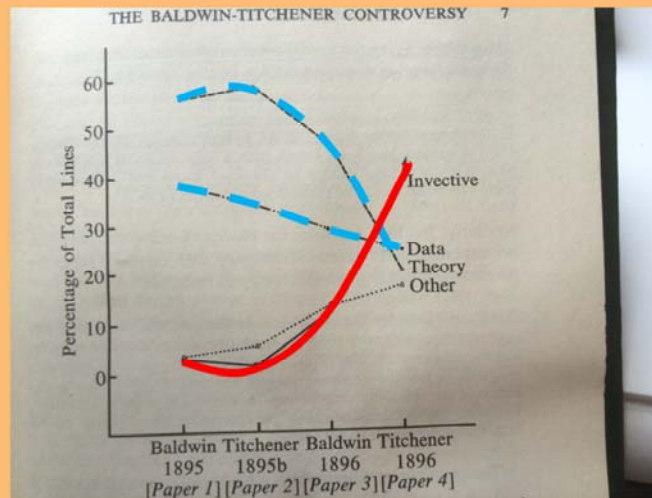
INTEGRATION / STAGNATION VERSUS FRAGMENTATION

It's historically common for research communities to split into competing schools. Searching (April 19, 2014) for the exact phrase "schools of thought" on Bing, I see 1,990,000 results.

"Schools" are a useful analytical tool. Looking at the collective works of groups of similarly-minded people gives us an opportunity to see patterns of agreement and disagreement.

Schools are also political movements, advocating for different ways of thinking and acting in a field.

I think it was Krantz who characterized the evolution of a field as running between two unproductive extremes, stagnation and fragmentation. (I haven't found the exact quote in time for this debate.) Knudson says much the same, in more detail, in his 2002 paper, "The essential tension in the social sciences: Between the "unification" and "fragmentation" trap." The extremes are relatively unproductive. They can also be infuriating.

Progress happens in the middle, where there is tension but where discussion and thinking haven't been short-circuited by a circus of personality.

This graph is from Krantz's classic collection of papers on Schools of Psychology. The graph shows the degeneration of an argument between the leaders of two schools. The opening papers were focused primarily on data and theory. Those are the dashed blue lines in the figure. A year later, the discussion had turned to invective--personal insults. That's the solid red line.

Two years is a short time for this kind of degeneration, but the pattern is not unusual. Knowledge communities naturally evolve between the extremes of stagnation and fragmentation (Krantz; Knudson). You don't have to look very hard to see symptoms of that fragmentation today.

In Rex's opening remarks, it was clear that he is grumpy about the way he's being treated by some activists in the context-driven school. What I'm illustrating with this slide is that the situation is normal. Even though the comments directed at him have been intensely personal, the degeneration of the disagreements into unproductive name-calling is an impersonal pattern. I'm not approving of this, at all. I'm saying that we should see it in historical context. People have to bounce off this extreme, to come back to a place that's useful.

The trend today might be a little worse than usual because the American culture has become unusually polarized. The broad social context reinforces all other trends toward polarization. In addition, we see in the broad culture, and in the testing culture, that there is money to be made by attracting followers using polarizing propaganda. That creates a tragedy for the field but good profit for a few individuals.

WE DISAGREE AT MANY LEVELS

1. We disagree about the theory and practice of the field
2. We disagree about the nature of skilled work (what techniques to use, how to use them, what types of information to seek and how)
3. We rely on different exemplars (different classic examples of good practice)
4. We disagree about how to teach the subject matter of the field and how to evaluate the results of instruction
5. We look to different places for continuing education
6. We rely on different authorities ("standard" texts)
7. We have different views about ethical boundaries
8. We disagree about governance of the field (how power and control should work, and for who)
9. We recognize different credentials

STPCON debate: Kaner's slides   5

Rex and I wrote / polished our slides having seen drafts of each other's slide decks. I know that he will say that the context-driven school started the divisions that we see in the testing field today.

That is absolutely inaccurate. The field was enormously divided back in 1983. There was a traditional view of testing that many people were emotionally attached to, that offered no useful guidance on how to do testing in Silicon Valley. Many of those people had little interest in hearing how we did things, and little respect for our ideas or practices when we explained them.

In this slide deck, I have the planned presentation (up to the bibliography) and then the rest (supporting slides, available if they are needed). In that second group, I give 5 examples of fundamental differences. These aren't just differences in vocabulary. They're differences in how we think about the field.

Let me add one more, on how we teach. At the last Workshop on Teaching Software Testing, Rex gave an excellent presentation on the new ISTQB syllabi and exams. He showed us, at several points, his instructional material, including prep for exams. At one point, I highlighted a difference between his courses and BBST. What I said was that it seemed that his emphasis seemed to value the students' ability to give the correct answer on the exam

whereas BBST was trying to teach students to give answers that showed relevance, insight and the exercise of judgment.

Rex treated that contrast as fair. The ISTQB-related courses are helping students prepare for certification exams -- BBST does not. ISTQB creates syllabi and exams that can be graded in a standardized way. Prep courses help students prepare for an exam that will be graded in a standardized way. This leaves less room for variation that reflects personal judgment. Ambiguity creates unfairness in this context, rather than opportunity.

I can respect this as exam preparation. However, many testers take only a few courses. If what they get is simplified and disambiguated, in my view, they are learning the wrong lessons about a field that relies (in my view) intensely on individual judgment.

OUR PROCESS FOR RESOLVING DISAGREEMENT?

- The traditional views are presented as if they were majority views
  - And if people won't follow them voluntarily
  - They are imposed on the field
    - Standards
      - Industry standards
      - DoD purchasing standards
      - Expert testimony that not following them is malpractice
    - Licensing of software engineers
      - Examinations based on the traditional view
    - Certification

STPCON debate: Kaner's slides   6

Time and time again I hear that most software projects are failures (see the Standish Group's CHAOS reports for example, at http://blog.standishgroup.com/). I hear the field is in chaos because most projects finish behind schedule and without all the features listed in the project's original requirements document. I hear that we are in this software crisis because we don't follow the good software processes. I hear that we don't have the professional discipline to create authoritative requirements documents or to manage our projects properly using metrics. I hear impressive statistics, for example, that 95% of software groups don't have a proper metrics program.

For decades these people have been telling us that traditional software engineering processes would rescue us from this chaos.

We have known for perhaps 40 years what we should do, but we refuse. Clearly, we are being very, very naughty. Perhaps our consultants should give us all spankings.

Instead of spankings, they give us standards. The standards tell us how to do software development The Right Way. Wielding these standards, the process advocates convince large organizations to require their software vendors to follow the standard processes and report the standard metrics. Some of these good people will testify in court that people who don't follow these standards are committing malpractice.

In other words, if we are too stubborn and irresponsible to follow The Right Way voluntarily, they will impose it on us.

Not everyone would agree that it is not a good idea to lock down requirements early in the project. (For example, think of all those "agile development" advocates.) Perhaps we shouldn't expect a project to work exactly as planned. (As President Eisenhower used to say, "Planning is everything. The plan is nothing.") Rather than calling that "chaos", perhaps we should call it "normal." Perhaps rather than trying to optimize our processes around the demand that we correctly make our most important decisions at the start of the project, we should optimize our processes for change. And perhaps the reason that so many executives refuse to tolerate formal software metrics programs in their companies is that so many of these programs have done so much more harm than good.

OUR PROCESS FOR RESOLVING DISAGREEMENT?

- The standards process is political
  - Dominated by people who
    - have something to gain from the standard
    - have reason to believe they can influence the result
  - Mid-1990's several of us realized that no matter how actively we tried to involve ourselves in the standards processes
    - we would have minimal impact
    - we would be encouraged to not participate

On the continuum between stagnation and fragmentation:
  - Industrial practice was remarkably diverse
  - Standards and training were stagnant

STPCON debate: Kaner's slides   7

My first attempt to join an IEEE standards committee was in 1983. I spoke to someone at IEEE (perhaps the committee chair, I no longer remember) but I guess my views were too politically incorrect. Even though I held a Ph.D. and was employed full-time in the software industry, the person on the other end of phone politely but firmly told me to go away. Later, as I got better known, I could get onto standards committees but I learned, again and again that I would never have a substantive impact on a standards committee run by IEEE or the American Society for Quality. No matter how hard I worked and no matter how good my ideas were, it would not matter.

For my first decade in the field, I wondered whether there was something wrong with me. In the next few years, I would learn that several colleagues who I respected had similar experiences. The way the standards community was going to deal with our divergent views would be to ignore them. We could join the committees and get our names on the standards documents, but we weren't going to change the approach or even get a formal acknowledgement that there are alternative approaches that are reasonable and responsible.

During this period, Brian Lawrence, Drew Pritsker and I formed the Los Altos Workshops on Software Testing. These were small-group discussions where people could vigorously disagree, but were expected to back up their points with experience reports (reports of

their personal experiences, events they had personally witnessed and could be questioned closely about, not second-hand or fifth-hand descriptions of someone else's data. This was our way to foster change in practice, by education rather than by imposition.

CHARACTERIZING DIFFERENCES

My initial goal was to understand our communication (people talked past each other, saying the same words and meaning entirely different things)

- Initially, I focused on groups who built their view of testing around one or two test techniques, as if that encompassed the field. I called these "paradigms."
  - This is consistent with Kuhn's usage, when he uses "paradigm" to mean a common example or focusing technique that helps define a subcommunity
  - It caused confusion because this is only one of Kuhn's 35 meanings of "paradigm"
  - It was inaccurate because it focused on too narrow a subset of the community (and in a way that most of the described people would not want to accept about themselves)

STPCON debate: Kaner's slides   8

Perhaps in 1993, I started noticing that many test organizations (and many test-related authors, speakers and consultants, including some friends and other colleagues I respected) relied heavily — almost exclusively — on one or two main testing techniques. In my discussions with them, they typically seemed unaware of other techniques or uninterested in them.

I also noticed the weakness of communication among leaders in the field. At conferences, we would speak the same words but with different meanings. Even the most fundamental terms, like "test case" carried several different meanings–and we weren't acknowledging the differences or talking about them. Many speakers would simply assume that everyone knew what term X meant, agreed with that definition, and agreed with whatever practices were impliedly good that went with those definitions. The result was that we often talked past each other at conferences, disagreeing in ways that many people in the field, especially relative newcomers, found hard to recognize or understand.

It's easy to say that all testing involves analysis of the program, evaluation of the best types of tests to run, design of the tests, execution, skilled troubleshooting, and effective communication of the results. Analysis. Evaluation. Design. Test. Execution. Troubleshooting. Effective Communication. We all know what those words mean, right? We all know what good analysis is, right? So, basically, we all agree, right?

Well, maybe not. We can use the same words but come up with different analyses, different evaluations, different tests, different ideas about how to communicate effectively, and so on.

Initially, I suggested a comparison to Thomas Kuhn's notion of paradigms (http://www.amazon.com/Structure-Scientific-Revolutions-Thomas-Kuhn/dp/0226458083) (for a summary, read this article in the Stanford Encyclopedia of Philosophy http://plato.stanford.edu/entries/thomas-kuhn).

A paradigm is a way of thinking about a class of problems, providing insights and direction for future research or work. It provides a structure for deciding what is interesting, what is relevant, what is important–and implicitly, it defines limits, what is not relevant, not particularly interesting, maybe not possible or not wise. The paradigm creates a structure for solving puzzles and people who solve the puzzles seen as important in the field are highly respected. Scientific paradigms often incorporate paradigmatic cases–exemplars–especially valuable examples that serve as models for future work or molds for future thought. Kuhn used the word "paradigm" in several ways.

I applied the idea of basing your thinking and practice on a few exemplars to describing how many people approached testing. James Bach and I polished the idea in presentations called Paradigms of Black Box Software Testing (http://kaner.com/pdfs/swparadigm.pdf).

At this point (1999), we listed 10 key approaches to testing:
- Domain driven
- Stress driven
- Specification driven
- Risk driven
- Random / statistical
- Function
- Regression
- Scenario / use case / transaction flow
- User testing
- Exploratory

There's a lot of awkwardness in this list, but our intent was descriptive and this is what we were seeing. When people would describe how they tested to us, their descriptions often focused on only one (or two, occasionally three) of these ten techniques, and they treated the described technique(s), or key examples of it, as guides for how to design tests in the future. We were trying to capture that.

I don't think that many people saw this work as divisive or offensive — some did and we got some *very* harsh feedback from a few people. Others were intrigued or politely bored.

Several people were confused by it, not least because the techniques on this list were far

from mutually exclusive. For example, you can apply a domain-driven analysis of the variables of individual functions in an exploratory way. Is this domain testing, function testing or exploratory testing?

- One answer is "yes" — all three.
- Another answer is that it is whichever technique is dominant in the mind of the tester who is doing this testing.
- Another answer is, "Gosh, that is confusing, isn't it? Maybe this model of "paradigms" isn't the right subdivider of the diverging lines of testing thought."

Over time, our thinking shifted about which answer was correct. Each of these would have been my answer — at different times.

My current answer is the third one. I think this DOES describe how some testers think about the field, but I don't think it is a widespread, fundamental distinction. Within a few years, I abandoned it as a way of characterizing the different approaches to our field.

CHARACTERIZING DIFFERENCES

When we were writing *Lessons*, we looked more deeply at our own assumptions

- I had seen a broader collection of contexts,
  - watching people doing testing in ways that I had considered "wrong"
  - and seeing them get better results than I would have gotten if I had done it "my way"
- Agile development had arrived and many people in the field were more willing to reflect on their assumptions
- We were fed up with a political structure in the field that marginalized dissent

STPCON debate: Kaner's slides   9

Through the 1980's, I watched polarized discussions among testers. People used the same words in different ways, so much that I had (and still have) no idea what someone means when they say (for example) "test case" or "automated test" unless I know something about their point of view. In addition, we have very different beliefs about similar phenomena--for example, is GUI-level regression testing cost-efficient? Is it an effective way to reveal information of interest to the tester? Some people think this is a "best practice" or at least an essential one, while others describe it as a candidate for industry-worst practice. These kinds of disagreements are familiar, in tone, to anyone who has worked through the concept of "schools of thought" in other fields and so I decided to organize my thinking about the diversity of theory and practice in testing around the notion of schools of thought.

I think some of us started talking about forming a "school" of testing in about 1996. We talked about creating a "retail software testing association". Rather than being treated as outsiders in a broad community whose discussions were dominated by standards we considered irrelevant and processes we considered wasteful and ineffective, we wanted to focus on what our community saw as skilled testing, as part of a process focused on creating great software for the mass market.

I'm not sure when we started talking about a "school of thought" rather than an

organization that would provide a collegial place to work.

As I think of schools of thought, a school of testing would have several characteristics:
- The members share several fundamental beliefs, broadly agree on vocabulary, and will approach similar problems in compatible ways:
  - In practice (though this is not always desirable), members of the same school typically cite the same books or papers, quote the same facts, and refer to the same stories / myths and the same justifications for their practices.
- Even though there is variation from individual to individual, the thinking of the school is fairly comprehensive. It guides thinking about most areas of the field. If we applied this to testing, it might cover all of these:
  - how to analyze a product
  - what test techniques would be useful
  - how to decide that X is an example of good work or an example of weak work (or not an example of either)
  - how to interpret test results
  - how much troubleshooting of apparent failures, why, and how much troubleshooting by the testers
  - how to staff a test team
  - how to train testers and what they should be trained in
  - what skills (and what level of skill diversity) are valuable on the team
  - how to budget, how to reach agreements with others (management, programmers) on scope of testing, goals of testing, budget, release criteria, metrics, etc.
- The subculture associated with a school might also guide members' interactions with peers:
  - what kinds of argument are polite and appropriate in criticizing others' work
  - what kinds of evidence are persuasive
  - what forums for discussion are available (if none, create some) to help members coach other members in refining their understanding and figuring out how to solve not-yet-solved puzzles
- Schools are also often proselytic (although the extent to which this is *desirable* is open to discussion):
  - they think their view is right
  - they think other people should think their view is right
  - they promote their view
  - however, they are not necessarily dogmatic or hostile toward other views. I'll come back to this shortly.

One key benefit of competing schools is that they create a dialectic, a detailed study in contrasts that sharpens the distinctions, brings into greater clarity the points of agreement, and highlights open issues that neither side is confident in, or can defend well. It also creates

a collection of documented disagreements, documented conflicting predictions and therefore a foundation for scientific research that can influence the debate (Gross, 2009; Hock, 2008; Slife, 2007).

One key reason that division into schools is natural is that every model (or theory, if you prefer that term) is a simplification. Scientists ignore some facts and phenomena in order to bring others into a clearer focus that can be organized with an explanatory model. (As George Box teaches, no model is correct; what's important is that some models are useful).

Differences in underlying models have consequences. If two professionals in a field strongly disagree about what issues or concerns or observations should be treated as fundamental in their field, they will probably differ in how they practice the field, how they teach it, how they talk about it with colleagues, and how they improve their expertise. If their disagreement is commonplace in their field, each will probably find a school of thought and practice that is amenable to her or his approach (and not with the other's approach), that will help them evolve in their chosen direction.

TAKING ACTION

- In software development, proponents of the ideas that we now call "agile" had been marginalized for years
  - A few of them wrote the Agile Manifesto
  - It had enormous impact because it spoke to a truth that
    - had been experienced by a large number of people
    - had been dismissed by the established academic / standards / big-systems-contract / corporate-training communities
- The agile manifesto worked well for programmers but some of us saw it as off-target for most of the commercial software testing community
  - James, Bret and I decided to do the same type of thing for testers and so we published the context-driven principles

STPCON debate: Kaner's slides   10

Ultimately, we found it useful to think in terms of five schools, first described by Bret Pettichord (2003):

- *Factory school*: emphasize reduction of testing tasks to routines that can be automated or delegated to cheap labor.
- *Control school*: emphasize standards and processes that enforce or rely heavily on standards.
- *Test-driven school*: emphasizes code-focused testing by programmers. Some people prefer to call this the *agile* school.
- *Analytical school*: emphasis on modeling or other more theoretical / analytical methods for assessing the quality of the software. University researchers often fit here.
- *Context-driven school:* emphasis on adapting to the circumstances under which the product is developed and used. I identify my own approach with this school.

I think this has been a useful set of characterizations. That is, when I read something, it can help me understand what they're trying to say by considering the cultural cluster that they're speaking within.

I chose not to sign Bret's paper because he identified the schools with specific individuals.

The identifications made good sense to us but the individuals we named weren't putting themselves up for the naming. Some (such as Rex) took this as an unreasonable personalization, as a typecasting of them that they did not invite and were not interested in accepting. It would have been better to identify key papers, or sections of papers, as representative of the way of thinking rather than identifying key names.

I don't think that would be such a difficult task, but none of us has gotten around to it.

TAKING ACTION

Much of what underlies
> the appeal of CDT
> and the hostility being voiced by some advocates of CDT

comes because many testers felt they were required to "get certified" by studying material they did not believe and answering questions the 'right way' even though they considered these answers wrong.

Many have told me they considered this personally offensive.

I suspect that some of them are more hostile to traditional practices now than they would have been if the certification establishment was less strong in their countries.

Upham, S.P., Rosenkopf, L., & Ungar, L.H. (2010). Positioning knowledge: schools of thought and new knowledge creation. Scientometrics, 83, 555-581. http://link.springer.com/article/10.1007%2Fs11192-009-0097-8 is a particularly good start for exploring the marketing discussion.

A SCHOOL PROVIDES SOME BENEFITS

- Exposes the empirical reality of segmentation in the field.

- Provides coherent forums for expressing alternate views

- Creates a space for collegial but critical evaluation peer review. People will listen and might strongly disagree, but they won't dismiss ideas based on rejection of a few underlying assumptions.

- Provides a framework for developing new ideas that build on "the right" starting assumptions

- Creates a training ground for the next generation of thinkers, a training ground that starts from different assumptions than the old view

- *Sets up a dialectic process:*
  - *Opposing views grind against each other until a better third way emerges.*
  - *To me, this is the most important benefit.*

CONCERNS

- The marketing of the "grand debate" over context seems to be a distraction from issues I consider more difficult and more urgent:
  - I don't see much progress in developing the individual-contributor skills of software testers. Where is the emphasis on mastery of individual testing techniques?
    - There is some work on this, but it's not very visible
  - I see little or no progress on software metrics.
    - As far as I can tell, the traditionalists have added almost nothing new (yes, there are new measures, new bells and whistles, and new equations, but I see no improvement in attention to validity, risk of dysfunction, credibility, and rarely much improvement in empirical quality)
    - The CDT community seems unable to replace the metrics we criticized with anything better.
      - *Don't do that* is not a long-term answer.
      - Qualitative methods, fashionable today for good reason, are more time-consuming and more difficult to do well than many current popularizers are saying (perhaps, more than they realize).

STPCON debate: Kaner's slides   14

Some people criticize the "schools" because they don't like our particular divisions or because they think that some schools are mischaracterized. Some of these criticisms are thoughtful and well-informed. I appreciate them.

In contrast, other people object to the entire idea of "schools," saying the idea is divisive, that we should spend our time doing better testing (whatever that means) not on inventing differences with each other.

It is one thing to understand the disagreements well but not find them relevant to your work. It is a very different thing to wish away the underlying differences in theory and practice that exist in the field. Making the "schools" go away won't make the controversies go away. It will just deprive us of a tool for exploring them.

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FIVE SIMPLE EXAMPLES OF GENUINE DISAGREEMENTS IN OUR FIELD

1. ISTQB (and software engineering texts) present V-model as "normal" and in wide use

   ➢ I have rarely (maybe never) seen it used well.
   ➢ Many, many people pay lip service to it.
   ➢ Pretending the V-model applies blinds people to the actual dynamics of their project.
   ➢ I think that following the model usually does more harm than good

STPCON debate: Kaner's slides   20

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FIVE SIMPLE EXAMPLES OF GENUINE DISAGREEMENTS IN OUR FIELD

2. Defects are treated (e.g. by ISTQB) as purely objective

➢ "The cause of a fault or defect is an error or mistake by a person" (Spillner et al)
➢ System testing is done to check whether a product meets *specified* requirements.
  ▪ Contrast with Weinberg: "Quality is value to some person."
    ❑ A feature for one person is a defect for another.
    ❑ A defect is an unnecessary reduction in value, whether anything was written or not

STPCON debate: Kaner's slides   21

Rex notes to me that the ISTQB syllabus is not always fully consistent with the Spillner books, or other study guides for ISTQB exams. I am not trying to present these views as official views of ISTQB, just to present them as ideas that are commonly taught to students of the traditional approaches to testing.

FIVE EXAMPLES OF DISAGREEMENTS

5. **ISTQB exam-prep study books (Spillner, on Foundations and on Test Management; and Hambling) present measurement in ways that I see as:**
   - **simplistic**
   - **blind to issues of validity**
   - **blind to risks of measurement dysfunction**

With all that we know about measurement and its challenges, why are these presentations so simplistic and, in my view, so reckless?

SOME OF THE USUAL OBJECTIONS

1. There are not exactly and only four schools of software testing

STPCON debate: Kaner's slides   25

These final slides consider common objections to the idea of characterizing the many differences in our field in terms of a few organizing clusters of ideas (that we're calling "schools" of thought).

SOME OF THE USUAL OBJECTIONS

1. There are not exactly and only four schools of software testing

   I agree

   - The parsing into these four groups
     - was done by a small number of individuals
     - based on our personal observations

STPCON debate: Kaner's slides   26

The first issue is that some people object to the specific subdivisions that we made.

I'm not surprised by the objection. I am more surprised by comments (especially on Twitter) that attempt to defend the subdivision as "correct."

Look, a few of us chose to organize the disagreements and agreements in the field in this way because we saw it as useful. This is a classic example of a construction. It is a way we choose to look at the world. That doesn't mean that the world actually organizes itself in exactly this way. It means that we believe we can understand better how some things work if we view them through this lens, bringing some ideas in focus and setting others (seen-to-be less important) into the background.

SOME OF THE USUAL OBJECTIONS

1. There are not exactly and only four schools of software testing
   - The parsing into these four groups
     - was done by a small number of individuals
     - based on our personal observations
   - There are scientific methods (or, at least, careful empirical methods) for sorting out the competing subcultures in a professional community
     - We did not use them

STPCON debate: Kaner's slides   27

The reference list describes co-citation analysis and some approaches to textual analysis.

This kind of work is very difficult when working with practitioner literature (papers and conference talks for industrial audiences rather than academic audiences). The academic literature is heavily indexed, and there are standard ways to acknowledge someone else's influence on your writing. In the academic world co-citation analysis is *relatively* easy. Practitioner literature is not well indexed and ways of acknowledging work are much more variable and much less precise.

We weren't looking for the relative precision that you can achieve with these more thorough research approaches. But the fact that we did not use them should give caution as to how defensible you should consider our exact distinctions. We are speaking in useful approximations.

SOME OF THE USUAL OBJECTIONS

1. There are not exactly and only four schools of software testing
   - The parsing into these four groups
     - was done by a small number of individuals
     - based on our personal observations
   - There are scientific methods (or, at least, careful empirical methods) for sorting out the competing subcultures in a professional community
     - We did not use them

Our analysis was thoughtful and it was not done lightly
   - But it is far from infallible

SOME OF THE USUAL OBJECTIONS

2. The names for the schools are imperfectly descriptive

Some people think that the names of the five schools were poorly chosen. The most commonly criticized names are "factory school" and "standards school".

SOME OF THE USUAL OBJECTIONS

2. The names for the schools are imperfectly descriptive

We made them up!

STPCON debate: Kaner's slides   30

Occasionally, I see twits* insisting on Twitter that these are the true names of the schools and that people labelled with them should consider themselves stuck with the names.

There is nothing magical about these names. No deity pronounced them. They are labels of convenience. We thought they were fair and reasonable when we used them, but the selection was subjective.

(Twit: a technical descriptor for a person who says things on Twitter that you consider stupid or obnoxious)

SOME OF THE USUAL OBJECTIONS

2.   The names for the schools are imperfectly descriptive

- We made them up

- The names were our summary labels for groups that we perceived.
    - They were fair and appropriate labels
    - To the extent that our perceptions were fair and accurate

SOME OF THE USUAL OBJECTIONS

2. The names for the schools are imperfectly descriptive
  - The names were our summary labels for groups that we perceived.
    - They were fair and appropriate labels
    - To the extent that our perceptions were fair and accurate

  - The people / schools we applied them to never adopted them or agreed to them
    - But they never suggested alternate groupings or names

STPCON debate: Kaner's slides   32

In the ideal case, some one would have responded by saying, "You are mischaracterizing my school. These are our beliefs and this is a better name for us." That would have been more effective for subsequent discussions. It would have given a more collegial basis for exploring our areas of agreement and disagreement.

But it hasn't happened. Instead, we are stuck, for now, with the names we made up because no one has given us better ones.

Some of the usual objections

2. The names for the schools are imperfectly descriptive
   - The names were our summary labels for groups that we perceived.
     - They were fair and appropriate labels
     - To the extent that our perceptions were fair and accurate
   - The people / schools we applied them to never adopted them or agreed to them
     - But they never suggested alternate groupings or names

Apart from "context-driven testing" (our name for ourselves), I don't see a principled basis for insisting on any name or any classification of anyone else.

SOME OF THE USUAL OBJECTIONS

3. Some people argue that if you are active in the profession, you must be a member of one of these schools

I'm not sure whether anyone still makes this claim. Another variant of the claim is that if you are active in the field, you must be a member of SOME school even if it is not one of these. Again, I am not sure it is still current. But several years ago, it came up in informal discussions (e.g. mailing lists) and got some people pretty annoyed.

As I said on Bach's blog in 2008, "I think that it is inappropriate to place individuals in schools that they don't identify with. I think it is fine to say that a specific paper by JoeX illustrates the kind of thinking that we call Factory School, but I don't think it is appropriate to call JoeX a Factory Schooler unless he would call himself that. "

SOME OF THE USUAL OBJECTIONS

3. Some people argue that if you are active in the profession, you must be a member of one of these schools

That's ridiculous!

STPCON debate: Kaner's slides   35

The controversy between behaviorism and information processing involved fundamental issues, but some experts in the field could acknowledge it and then ignore it. For example, I studied with Professor John Gaito, at York University. His research focused on the biochemistry of learning and memory (Gaito, 1966, 1976). Gaito was well aware of the ongoing arguments between behaviorists and information processing theorists (two dominant approaches to learning theory at that time), but he didn't find them useful for guiding his work. In my experience, this is very common.

In studies of schools using co-citation analysis, it is common to find individuals who bridge two schools. They are familiar with the literature of each. They might publish papers that present ideas developed by one group in a way that explains it, perhaps makes it useful, to the other group. There is some evidence that these people might be more effective in introducing new ideas.

Therefore, as an empirical claim, I think there is no basis for the assertion that everyone is a member of one of the Testing Schools whether they think so or not.

SOME OF THE USUAL OBJECTIONS

3. Some people argue that if you are active in the profession, you must be a member of one of these schools
    - Analyses of social networks in scientific communities readily show school-like subcommunities.
        - For example, people within one school read and cite each other's papers and read / cite other-school papers much less
    - But they also show people who bridge the communities, bringing ideas from one to the other

SOME OF THE USUAL OBJECTIONS

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Many of us view the CMM's "exhaustive" list of maturity levels as offensively arrogant (and wrong): There is no reason to consider the testing-schools list more accurate or inclusive than CMM

STPCON debate: Kaner's slides   37

As I noted on Bach's blog, in 2008:

I think we grow impatient with some of the rejections of the idea of schools or the value of schools because we keeping running into some specific people who have a strong business interest in pretending that there is no controversy in the field. Unlike university studies, which (should) teach students to revel in controversy and critical analysis, the IT certifications (including testing certifications) generally present a one-true-way view of the field that is easy to teach, easy to examine, easy to certify against, and in my view, mind-numbing and therefore unfit for use in testing (which, surely, is applied critical thinking). Some people do business in the IT certification marketplace because they genuinely believe in the my-size-fits-all view of the world. I disagree with these people, might not want to hire them for anything, but don't challenge their ethics. Other people in the same marketplace know better but promote the oversimplification because it makes it easier to advertise and sell their courses and their pet certification. It is easy to generalize, from the (I think correct) perception that this second group are charlatans to a broader impatience with others who just don't find the idea [of schools] useful.

SOME OF THE USUAL OBJECTIONS

4. A few people sometimes claim that you have to be a believer in CDT to understand CDT

Why would anyone say such a thing?

STPCON debate: Kaner's slides 38

I saw this claim on Twitter.

I think the main way this claim is used is to argue that true believers in context-driven testing are the only people allowed to question or criticize CDT's ideas because everyone else doesn't truly understand them.

I think this is an amusing way to intimidate people, to the extent that being obnoxious is amusing.

SOME OF THE USUAL OBJECTIONS

4. A few people sometimes claim that you have to be a believer in CDT to understand CDT

Why would people say such a thing?

- When Kuhn wrote about the incommensurability of paradigms, he was explaining that
  - what separates the groups is not just a difference of opinion.
  - It is a difference of basic assumptions, that colored even the vocabulary
- This often makes "the other guy's" papers largely irrelevant
- But it doesn't mean you can't understand them.

STPCON debate: Kaner's slides   39

Sometimes, a rationale for the claim is made. As I understand the rationale, it is "You can't criticize me because you don't agree with me, and Kuhn says that if you don't drink my Kool-Aid, you can't understand what I am thinking and therefore you can't understand or fairly comment on what I say."

"Kuhn says … don't disagree with me" is a more authoritative-sounding way of telling people to shut up.

SOME OF THE USUAL OBJECTIONS

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Why would people say such a thing?

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  - It is a difference of basic assumptions, that colored even the vocabulary
- This often makes "the other guy's" papers largely irrelevant
- But it doesn't mean you can't understand them.

Researching alternative paradigms is a core skill that academics expect from graduate students.

SOME OF THE USUAL OBJECTIONS

5. At least one proponent of CDT describes a school as analogous to a religion

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   You know, the "THERE CAN BE ONLY ONE" *kind of religion.*

SOME OF THE USUAL OBJECTIONS

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You know, the "THERE CAN BE ONLY ONE" *kind of religion.*

As Kuhn put it, "Usually individual scientists, particularly the ablest, will belong to several such groups either simultaneously or in succession."

SOME OF THE USUAL OBJECTIONS

5. At least one proponent of CDT describes a school as analogous to a religion

As Kuhn put it, "Usually individual scientists, particularly the ablest, will belong to several such groups either simultaneously or in succession."

Of all the concerns I have about the overselling of "schools", I see the religious analogy as the most pernicious

➢ Because it seems to excuse us from treating "non-believers" as peers who are entitled to be taken seriously and treated collegially.

STPCON debate: Kaner's slides   44

As I wrote in the 2009 draft,

"Some people who identify with the context-driven school take a more combative position. I emphatically dissociate myself and my work from that attitude. I do not agree that you have to choose what school you belong to, or that you belong to a school whether you like it or not. I do not agree that you are either with us or against us, and that if you are hold another view, you are ethically wrong or personally naïve or stupid. I do not advocate that competing schools are like competing religions. I see religious zealotry as a purely destructive force. "